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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/664,883	09/22/2003	Tatsuhiro Fukuzawa	50195-388	4240

7590 06/22/2007 McDERMOTT, WILL & EMERY 600 13th Street, N.W. Washington, DC 20005-3096	
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EXAMINER HODGE, ROBERT W	
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ART UNIT 1745	PAPER NUMBER
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MAIL DATE 06/22/2007	DELIVERY MODE PAPER
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/664,883

Applicant(s)

FUKUZAWA ET AL.

Examiner

Robert Hodge

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1745

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 23 May 2007.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- ☐ Notice of Informal Patent Application
- ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 5/23/07 has been entered.

### ***Response to Arguments***

Applicant's arguments filed 5/23/07 have been fully considered but they are not persuasive. Currently amended claim 1 recites that the current collector has "an approximately rectangular shape". Applicants admit that the current collector of Uchino has a rectangular shape, but by the addition of the tab feel that the current collector is no longer **approximately rectangular**. However this is not found persuasive because of the use of the word approximately. Since the majority of the current collector is still rectangular it is still "approximately rectangular" and reads on the newly added limitation in claim 1. Applicants further state that the opening in Uchino does not face the stacking direction. However what is required by said limitation? The opening can be on any side as long as it faces towards the stack. Therefore the previous rejections will be maintained. With regards to newly added claims 9-13, they will be addressed in the new grounds of rejection below.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 8 and 13 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 8 recites the limitation "the laminated sheet" in line 2 of the claim. There is insufficient antecedent basis for this limitation in the claim.

Claim 13 is an incomplete claim. The last section of the claim ends with "and" and nothing following it. Furthermore there is no period ending the claim. For purposes of examining the Examiner assumes that the claim ends with the word "terminals" in the second to last line of the claim and the Examiner will formulate the prior art grounds of rejection based on this assumption.

***Claim Rejections - 35 USC § 102***

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1, 4, 5 and 7 are rejected under 35 U.S.C. 102(b) as being anticipated by JP-2002-075455 hereinafter Uchino.

Uchino teaches a stacked lithium ion secondary battery comprising sheet electrodes including a collector and a polymer electrolyte positioned between the electrodes which are located on the outermost layers in such a manner so that the

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collectors are exposed to the outside and function as terminals, wherein said stacked lithium ion secondary battery is a plurality of batteries connected in series and said stacked battery is used in a vehicle (abstract, paragraphs [0002] and [0007]-[0011]).

***Claim Rejections - 35 USC § 103***

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 2, 3, 6 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Uchino in view of U.S. Patent No. 5,618,641 hereinafter Arias.

Uchino teaches everything in the above 102 rejection as well as that the positive active material includes a composite oxide of lithium and a transition metal and the negative active material includes any one of a carbon and the composite oxide of lithium and transition metal (paragraphs [0019] and [0020]).

Uchino does not teach bipolar electrodes or that the stacked batteries can be arranged in parallel or that a sealing resin is used around an edge of the opening.

Arias teaches a bipolar battery construction having stacked batteries that can be arranged in series or parallel (abstract and column 1, lines 28-29). Arias also teaches the importance of sealing the openings of bipolar batteries with elastomeric edge seals (column 7, lines 34 et seq.)

At the time of the invention it would have been obvious to one having ordinary skill in the art to include the teaching of the Arias reference in the Uchino reference in order to provide a stacked battery configuration that would be more compact by

replacing the electrodes of Uchino with bipolar electrodes which are well known in the art and also arranging the stacked batteries either in series or parallel in order to achieve the desired voltage and current output for the application at hand. It would have also been obvious to seal around the openings of Uchino in order to prevent gases such as hydrogen from escaping the battery thus causing an explosion hazard and also to prevent anything from the external environment from entering the battery, which could cause a short circuit or severely reduce the life of the battery such as moisture.

Claims 1-3, 5, 9, 11 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,254,415 hereinafter Williams in view of U.S. Pre-Grant Publication No. 2003/0129495 hereinafter Yamamoto.

Williams teaches a stacked battery comprising an electrode stacked body formed by stacking sheet bipolar electrodes and an electrolyte layer, wherein the electrodes include a collector and the electrolyte is placed between the electrodes, a packaging material housing the electrode stacked body having openings located at opposite ends of the stack which exposes a planar surface of the current collectors (positive and negative respectively at each end), such that the current collectors function as terminals, wherein the positive electrode active material layer is a composite oxide of lithium and a transition metal and the negative electrode active material includes carbon and the composite oxide of lithium and transition metal, which renders the battery a secondary lithium-ion battery and the stacked battery is connected in series (see figure 1, column 3, lines 24-67 and column 4, line 47 – column 7, line 31).

Williams does not teach that the shapes of the current collectors or the opening are approximately rectangular.

Yamamoto teaches that the shapes of secondary batteries are not critical to its operation and that batteries may be of any number of shapes (see paragraph [0055]).

At the time of the invention it would have been obvious to one having ordinary skill in the art to form the battery of Williams such that the collectors and the opening provided for access to the collectors would be rectangular as taught by Yamamoto to provide a battery that would be the proper shape for its intended application and also because it has been held that a change in shape is generally recognized as being within the level of ordinary skill in the art. In re Dailey 149 USPQ 47, 50 (CCPA 1966). See also Glue Co. v. Upton 97 US 3,24 (USSC 1878).

Claims 4, 7 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Williams in view of Yamamoto as applied to claim 1 above, and further in view of Uchino.

Williams as modified by Yamamoto does not teach that the electrolyte layer is a solid polymer, a vehicle comprising the stacked battery or the use of two laminate sheets for the packaging material.

Uchino as discussed above is incorporated herein. Uchino further teaches the multiple laminate sheets (paragraph [0011]).

At the time of the invention it would have been obvious to one having ordinary skill in the art to include a solid polymer electrolyte and laminating sheets in Williams as modified by Yamamoto as taught by Uchino in order to provide a battery with improved

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efficiency that is easily assembled through lamination. It would have also been obvious to provide the Williams battery in a vehicle as taught by Uchino to provide a vehicle that does not pollute by replacing the internal combustion engine with an electric motor and battery.

Claims 6, 8 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Williams in view of Yamamoto as applied to claim 1 above, and further in view of Arias.

Williams further teaches that the packaging material is sealed around the opening provided around the current collector.

Williams as modified by Yamamoto does not teach that the sealing material is a resin or that the batteries are connected in parallel.

Arias as discussed above is incorporated herein.

At the time of the invention it would have been obvious to one having ordinary skill in the art to seal around the openings with a resin in Williams as modified by Yamamoto as taught by Arias in order to prevent gases such as hydrogen from escaping the battery thus causing an explosion hazard and also to prevent anything from the external environment from entering the battery, which could cause a short circuit or severely reduce the life of the battery such as moisture. It would have also been obvious to arrange the stacked batteries of Williams as modified by Yamamoto either in series or parallel as taught by Arias in order to achieve the desired voltage and current output for the application at hand.




***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Robert Hodge whose telephone number is (571) 272-2097. The examiner can normally be reached on 8:00am - 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

RWH

  
JONATHAN CREPEAU  
PRIMARY EXAMINER